

Expanding Opportunities Through Partnerships

Southeast Coastal Ocean Observing Regional Association Annual Report 2018



SECOORA is the coastal ocean observing system for North Carolina, South Carolina, Georgia, and Florida. A coastal observing system is a combination of many components - from humans to hardware - that is used to collect data on our coastal environment. This data is then transformed into products and services that support safe and efficient marine operations, coastal economies, and a healthy, sustainable environment.





Message from the SECOORA Executive Director

We recognize strong regional partnerships are how we multiply SECOORA's impacts. I want to thank all of our partners and members for making 2018 one of our best years to date.

Through partnerships, SECOORA was able to expand observations. For example, we deployed seven coastal web cameras with Surfline and other organizations as part of a project to evaluate use of web cameras for various coastal observing applications. We also received funding to add six high frequency radars (HFRs) at new locations within the region and we are purchasing a new underwater profiling glider.

However, 2018 did present some real challenges. Hurricanes wreaked havoc on the Southeast, again. SECOORA was able to continue providing quick access to information via our Hurricane Resources page. In partnership with NOAA, Navy and a multitude of other partners, SECOORA-funded scientists deployed two gliders that bracketed Hurricane Florence, providing key datasets for analyzing observing data impacts on hurricane intensity forecasting. This effort resulted in funding for additional hurricane missions in 2019.

In 2019, SECOORA has two priorities. We will install and operate new observing assets and repair assets damaged by hurricanes. For our HFR network, this means going from 10 currently operating HFR to 20, doubling the area that has real-time surface current data! This is an amazing leap for SECOORA in one year. We appreciate all of the support we have received from the community, NOAA, Congressional and Administration staff, and HFR operators.

Our second focus is on planning for the future. We will be revising our major planning documents, including updating our Regional Coastal Ocean Observing System plan to identify areas of investment and improvement. To create meaningful plans, we need input from all of you. Stay tuned for opportunities to weigh in on priorities for observations, models, and other products. Completing this work will position SECOORA to effectively compete for funding to achieve our collective vision for the Southeast.

The hard work of our Board, members, principal investigators, and stakeholders is helping us expand observations and access to critical data. You make what we do possible. Please visit our website, www.secoora.org, for more information on current activities and how you can become involved.

Sincerely,

Debra Hernandez, Executive Director
Email: debra@secoora.org

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communications@secoora.org

Investing in the Next Generation of Ocean Experts

SECOORA is investing in the next generation of scientists and ocean experts by investing in scholarships and prize challenges that foster innovation. We also participate in events that allow us to engage with students and teach them about the importance of ocean observing.



SECOORA and the Gulf of Mexico Coastal Ocean Observing System hosted a booth at the St. Petersburg Science Festival, a two-day event that took place October 19-20, 2018, in St. Petersburg, FL. The Science Festival provided an opportunity to talk to attendees about navigation, ports, and ocean observing.



SECOORA is proud to announce the first winner of the Vembu Subramanian Ocean Scholars Award, Laura McGee from North Carolina State University. The award is allowing her to present her research, *Determining Hurricane-Induced CO₂ Flux in the South Atlantic Bight*, at two conferences.

The Vembu Subramanian Ocean Scholars Award will give me the opportunity to network with the ocean science community to build collaborations and will allow me to widely distribute my research results. This research will use cutting-edge data analysis techniques to better understand the role that tropical cyclones play in air-sea CO₂ flux.

Laura McGee,
First Vembu Subramanian Ocean Scholars Awardee
PhD Student at North Carolina State University



SECOORA is one of the 11 Regional Associations that partner with the U.S. IOOS to observe the changes in our ocean, coastal and Great Lakes environment.




The IOOS Association is a non-profit organization formed by the Regional Associations in support of the U.S. IOOS. SECOORA is an active member of the IOOS Association.



SECOORA is certified by the National Oceanic and Atmospheric Administration for our data management and governance practices. We deliver federal-quality data from the water, to the user and to the archive. Certification confirms we meet the gold standard for data.

SECOORA by the Numbers

13* 

HF Radars

* Three HFR damaged by Hurricane Irma will be replaced in 2019

13 

Buoys

4 

Models and Applications

6 

Coastal Stations

 **178**

Glider Days at Sea

47 

Students Supported

14.4 
MILLION

Page views and data requests for SECOORA supported investments on SECOORA.org and partner websites

40 

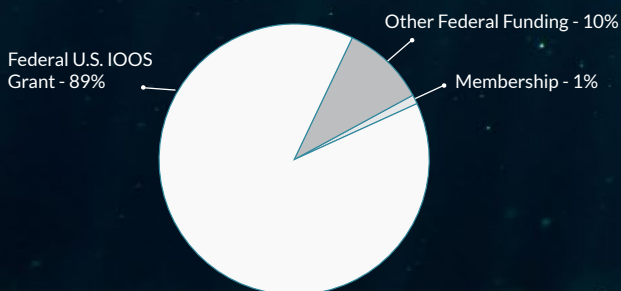
SECOORA Members

224 

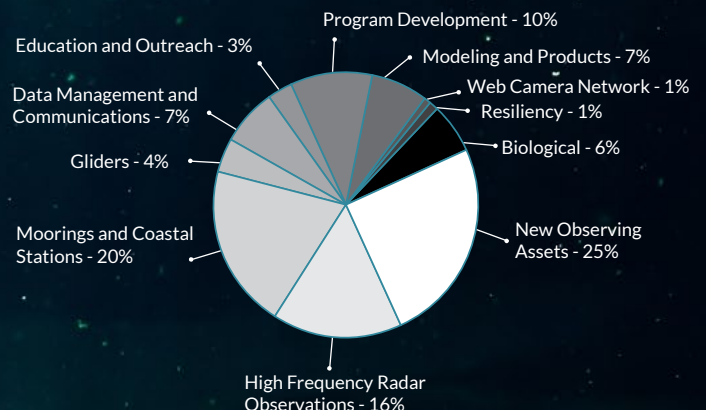
People Attended SECOORA's 7 Webinars

SECOORA Finances

INCOME \$3.89 MILLION



EXPENSES \$3.89 MILLION



SECOORA Projects by State

University of North Carolina at Chapel Hill

- ✦ Operate 3 high frequency radars and Deploy 1 additional high frequency radar
- 🚁 Provide glider for SECOORA Glider Observatory

North Carolina State University

- 📡 Coastal circulation nowcast/forecast system for the South Atlantic Bight and Gulf of Mexico
- 🚁 Provide glider for SECOORA Glider Observatory

LEGEND			
Buoy or Coastal Station	📍	Installed HFR	📡
Probable New HFR	📡	Glider Line	🚁
Planned HFR	📡	Camera Location	📷

University of North Carolina Wilmington

- 📡 Operate 9 buoys and 1 non real-time mooring
- 📡 Maintain NC moorings to support fisheries tracking

University of South Carolina

- ✦ Operate 2 high frequency radars and Deploy 2 additional high frequency radar
- 📡 Expand beach water quality swimming advisories with other environmental variables

Second Creek Consulting

- 📡 Maintain the SECOORA Marine Weather Portal

South Carolina Department of Natural Resources

- 📡 Install and operate 1 new water quality and meteorological station in the Charleston Harbor

University of Georgia

- 📡 Operate ocean acidification sensors on mooring

Skidaway Institute of Oceanography - University of Georgia

- ✦ Operate 2 high frequency radars and Purchase and Deploy 2 additional high frequency radars
- 🚁 Operate and coordinate glider deployments

Georgia Institute of Technology

- 🚁 Provide glider mission control services

Georgia Department of Natural Resources

- 📡 Maintain coastal GA acoustic array

Florida Institute of Technology

- ✦ Deploy 2 new high frequency radars

Fisheries Data Solutions, LLC

- 📡 Facilitating collection of FACT Network data

University of South Florida College of Marine Science

- ✦ Operate 3 high frequency radars
- 📡 Operate 3 buoys and 2 non real-time buoys
- ✦ Operate 5 coastal stations
- 🚁 Operate and coordinate glider deployments

University of Miami

- ✦ Operate 3 high frequency radars

OTHER PROJECTS

Axiom Data Science

- 📡 Maintain and support SECOORA Data Management and Communication infrastructure and activities

Southeast Coastal Ocean Acidification Network

- 📡 Facilitate research and discussion to address coastal and ocean acidification impacts

Southeast Disaster Recovery Partnership

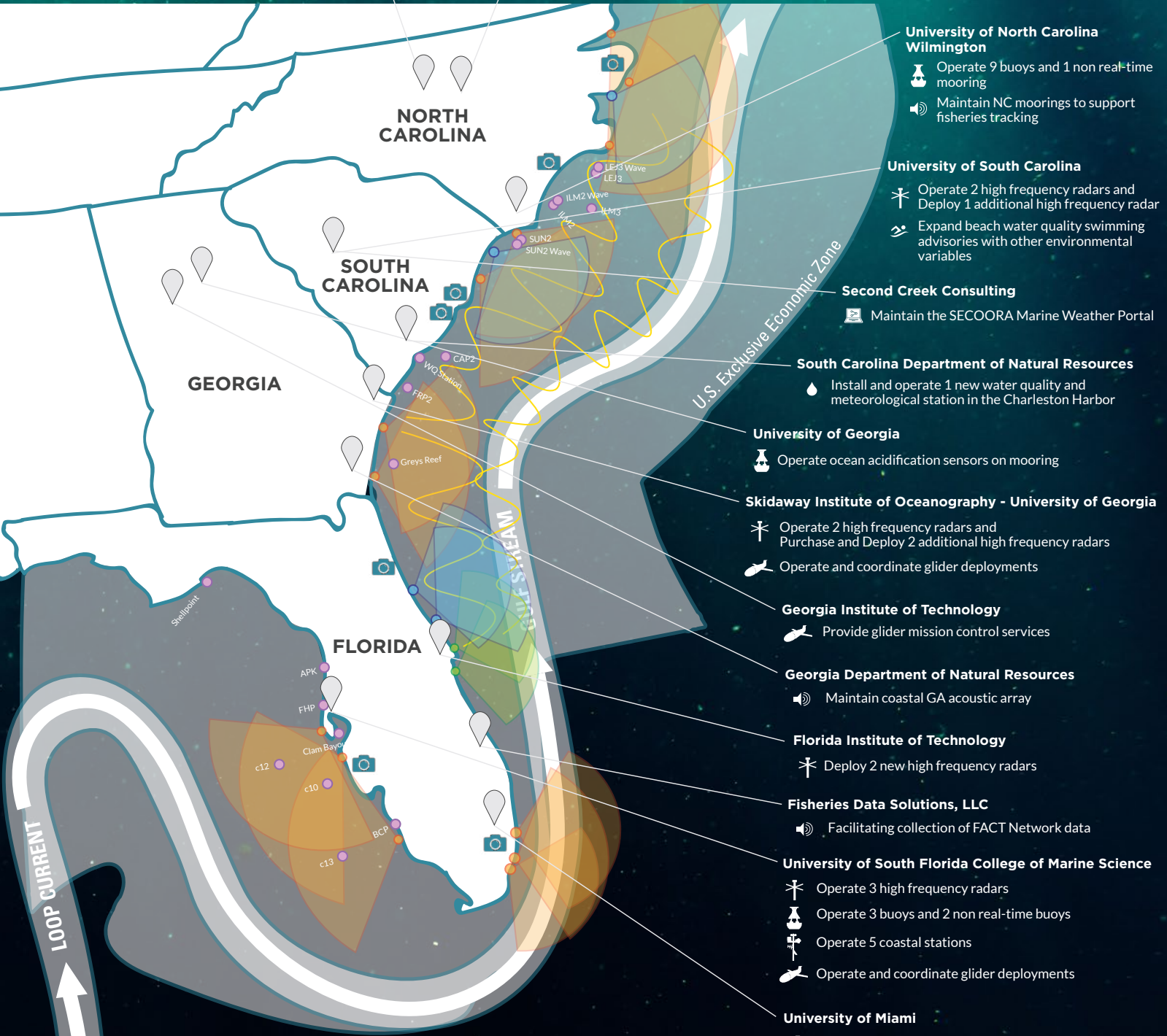
- 📡 Connect disaster recovery practitioners and provide a platform for training, resources, and relationships

Surflife

- 📡 Maintain 7 web cameras in Southeast coastal locations for research purposes

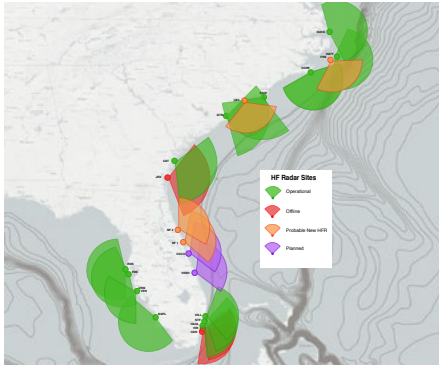
SECOORA

- 🚁 Purchase 1 new glider
- ✦ Purchase 2 used high frequency radars and 2 new high frequency radars
- 📡 Lead development of Animal Telemetry Network's asset inventory



Expanding Observations with New Assets

SECOORA's hard work to raise awareness of the benefits of ocean observing paid off in 2018. SECOORA received funding for new observing assets; specifically, high frequency radars and a glider.



Growing the High Frequency Radar Network

In 2018 SECOORA received funding to purchase two new and four used high frequency radars (HFR) for the Southeast U.S. HFR provide surface current mapping by monitoring the speed and direction that ocean water is flowing. This information can help the U.S. Coast Guard target search and rescue efforts.

Partners: UGA Skidaway Institute of Oceanography, U.S. IOOS, Florida Institute of Technology, University of Miami, University of North Carolina Chapel Hill, University of South Carolina



New Glider added to SECOORA Glider Observatory

Equipment ages and technology improves. In order to continue collecting vital data and information, SECOORA must invest in new equipment. In 2018, SECOORA received funding to purchase a new underwater profiling glider. This new glider will increase our number of glider days at sea. Gliders collect subsurface data, which are valuable for hurricane intensity forecasting and ecosystem monitoring.

Partners: UGA Skidaway Institute of Oceanography, USF College of Marine Science, U.S. IOOS



Seven Coastal Cameras Added to the Southeast U.S.

SECOORA teamed with Surflife and NOAA to form a public-private partnership to install and operate seven web cameras in the Southeast U.S. This network of web cameras is helping validate rip current models, identify right whales, and more.

This unique partnership lays the groundwork for a potential future nationwide webcam coastal ocean observing network.

Partners: Surflife, NOAA, U.S. IOOS, U.S. Geological Survey, University of South Carolina, University of North Carolina Wilmington

Improving Hurricane Forecasts and Outreach



Underwater Gliders Chasing Hurricane Florence

As hurricanes move towards land, they mix sub-surface and surface waters. This mixing of the colder, dense, sub-surface waters with the warmer, less dense, surface waters can weaken a hurricane.

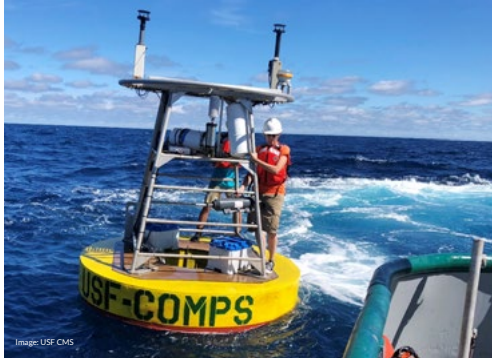
For the first time, two SECOORA gliders were deployed during a hurricane to collect real time water temperature and salinity measurements throughout the water column. This information collected during Hurricane Florence was then incorporated into hurricane forecasting models to determine the impact of the mixing of sub-surface and surface waters on the hurricane intensity.

These glider missions provided valuable data and in 2019, this research will continue. Gliders will be deployed near hurricanes to collect vital oceanographic information to improve forecasting.

Partners: UGA Skidaway Institute of Oceanography, USF College of Marine Science, Rutgers University, CarICoOS, MARACOOS, U.S. IOOS, NOAA OAR Atlantic Oceanographic and Meteorological Laboratory, Navy

Using Existing Assets to Expand Data Collection

With partnerships and use of existing assets, we can expand our observations.



New Acidification Sensors Added to a Buoy in the Gulf of Mexico

New acidification sensors were integrated onto a buoy offshore of Tampa Bay, Florida. This new suite of sensors can help us understand the influence of freshwater and nutrient runoff on ocean acidification. Buoys provide an ideal platform for filling an ocean acidification measurement gap.

Partners: USF College of Marine Science, U.S. Geological Survey, Tampa Bay Estuary Program, Environmental Protection Agency Region 4 (Southeast U.S.), Tampa Bay Environmental Restoration Fund



Red Tide Forecasting

Harmful algal blooms, sometimes referred to as red tides, devastated the west coast of Florida in 2018. A short-term red tide trajectory forecast is provided by USF College of Marine Science based on data from offshore monitoring buoys. This model is being used to assist scientists and personnel from the Florida Fish and Wildlife Conservation Commission with short-term harmful algal bloom trajectory forecasting.

Partners: USF College of Marine Science, Florida Fish and Wildlife Conservation Commission, U.S. IOOS



Acoustic Receiver Added to Buoys off Coast of Carolinas

Acoustic tags are implanted in marine species, such as fish, to track and monitor their movements. As fish travel, receiver arrays detect and record the acoustic signal from the tags – pinpointing the fish location. SECOORA partners teamed to maintain acoustics receivers near buoys in North Carolina. The addition of the receivers fills a gap for fish tracking.

Partners: UNC Wilmington, The Fact Network, Smithsonian Environmental Research Center, U.S. IOOS

Hurricane Outreach – Reaching New Audiences

People are inundated with data and information during hurricane season; however, most of the information cannot be found in one place. SECOORA noticed this gap and is creating data resources pages for each hurricane that might make landfall in the Southeast U.S.

To compliment this work, SECOORA is employing social media techniques to broadcast the data. This effort in 2018 proved successful. We were featured in Science Magazine and WIRED news stories for our hurricane efforts.

These efforts will continue in 2019, with SECOORA evolving to be the go-to source for coastal ocean information for the Southeast U.S.

Partners: Axiom Data Science, U.S. IOOS



SECOORA 2018 Members

SECOORA BOARD OF DIRECTORS

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Brendal Townsend, Ocean Tracking Network*

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for being our 2018 Corporate
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Become a Corporate Sponsor today to increase your brand's visibility
and help support opportunities for students to engage with coastal
ocean data. Email debra@secoora.org for more info.

SECOORA MEMBERS, NON-DIRECTORS

Molly Baringer, NOAA Atlantic Oceanographic and Meteorological Laboratory**
Jennifer Bennett Mintz, NOAA Ocean Acidification Program**
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Jennifer Warillow, Fathom Science*

LEGEND

Sustaining Member:	Blue
Institutional Members:	*
Individual Members:	†
Affiliate Members:	**
Public Seat	***
New Member:	Italicized

Join to Support SECOORA

SECOORA is designed by users, for users.
Membership provides your organization with
opportunities to influence coastal ocean observing
activities in the Southeast.

From North Carolina to Florida - universities, state
and local agencies, businesses and others have joined
SECOORA and helped set our regional priorities.

Become a member today and be a part of the
Southeast's observing future.

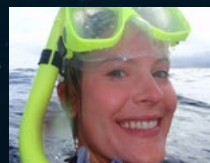
Email debra@secoora.org to join.



“

*Ocean Tracking Network is
excited to join SECOORA. We are
already working together to host
aquatic animal tagging data for
the FACT Network. Becoming a
SECOORA member furthers our
partnership and mutual mission
to invest in data sharing.*

”



Brendal Townsend
Senior Program Manager
Ocean Tracking Network